

Abstract of the Disclosure

A combination mechanical and magnetic support system for a flywheel power supply for storing and retrieving energy in which said power supply includes a flywheel that spins about an axis of rotation inside an evacuated chamber, and an attached motor/generator for accelerating and decelerating the flywheel for storing and retrieving the energy. One or more rolling element bearings and at least one magnetic bearing are mounted in bearing housings attached to the chamber for providing radial and axial support for the flywheel in the chamber. A wire metal mesh spring damper between portions of the rolling element bearings and the bearing housings provide both radial damping and radial centering stiffness to the flywheel. The support system has a radial stiffness that allows a cylindrical rigid body resonance of said flywheel to occur at a speed less 30% of the normal operating speed. The magnetic bearings support at least than 80% of the weight of the flywheel, thereby substantially extending the life the of the rolling element bearings.